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Construction Specification

PROJECT NO. 23095

WAG 1, Operable Unit 1-10, Group 3, WRRTF-01 Burn Pits Remedial Design

Idaho National Engineering
and Environmental Laboratory

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SPECIFICATIONS
FOR
WAG 1, OPERABLE UNIT 1-10, GROUP 3,
WRRTF-01 BURN PITS REMEDIAL DESIGN

Prepared for:

U.S. DEPARTMENT OF ENERGY
IDAHO OPERATIONS OFFICE

Idaho Falls, Idaho

Project File No. 23095

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BECHTEL BWXT IDAHO, LLC (BBWI)
Idaho Falls, Idaho 83415

Project Title:	**WAG 1, OPERABLE UNIT 1-10, GROUP 3, WRRTF-01 BURN PITS REMEDIAL DESIGN**		
Document Type:	**Construction Specifications**	**Project Number:**	**23095**
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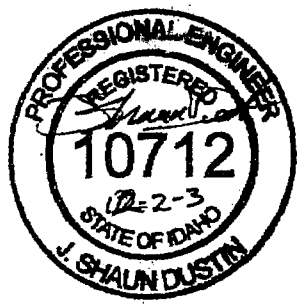
The following Sections of this Specification were prepared under the direction of the Professional Engineer as indicated by the seal and signature provided on this page. The Professional Engineer is registered in the State of Idaho to practice Civil Engineering.



Division 1 – General Requirements

01005 - Summary of Work
01051 - Construction Surveying and Staking

Division 2 – Site Work

02200 - Earthwork
02486 - Revegetation
02840 - Site Monuments

Division 3 – Concrete

03301 - Concrete

TABLE OF CONTENTS

WAG 1, OPERABLE UNIT 1-10, GROUP 3, WRRTF-01 BURN PITS REMEDIAL DESIGN

SECTION 01005--SUMMARY OF WORK

PART 1--GENERAL

SUMMARY:
The Subcontractor shall furnish the plant, labor, material, equipment, and supplies (except Government-furnished materials and/or equipment) and perform the work and operations necessary to construct the WRRTF-01 Burn Pit II and Burn Pit IV caps complete, in accordance with the RDRA Work Plan, subcontract drawings and these specifications.

Section Includes, but is not limited to:
Transporting, placing, compacting, and grading fill material, construction surveying and staking, cast in place concrete, and placement of monuments.

REFERENCES:
The following documents, including others referenced therein, form part of this Section to the extent designated herein.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910	OSHA Occupational Safety and Health Standards
29 CFR 1926	OSHA Health and Safety Standards for Construction

BECHTEL BWXT, IDAHO (BBWI)
Subcontractor Requirements Manual

Unless otherwise specified, references in these specifications or on the subcontract drawings to other specifications, codes, standards or manuals that are part of these specifications, but not included herein, shall be the latest edition, including any amendments and revisions, in effect as of the date of this Specification.

RELATED SECTIONS:
- Section 01051 – Construction Surveying and Staking
- Section 02200 – Earthwork
- Section 02486 – Revegetation
- Section 02840 – Site Monuments
- Section 03301 – Concrete

SUBMITTALS:
Submittals include, but are not limited to the following:

Shop Drawings and Vendor Data: Copies of shop drawings and vendors' data, as required by the Vendor Data Schedule for materials and equipment to be furnished by the Subcontractor shall be submitted by the Subcontractor. When the Subcontractor proposes an "equal" item, data shall be submitted to the Contractor in such detail to clearly illustrate that the item, including components and fabrication thereof, or that adjustment of features to make the item "equal", meets requirements of the subcontract drawings and specifications. The Subcontractor shall submit data for "equal" approval and obtain the Contractor's approval before committing to purchase the proposed "equal" item.

Manufacturers' Operation and Maintenance Manuals:
N/A

QUALITY ASSURANCE:
Quality Assurance Program requirements shall exist to assure that work performed is in conformance with the requirements established by the drawings and this specification. QA Program criteria applicable to this scope of work is addressed in the Special Conditions, BBWI Subcontractor Requirements Manual, General Provisions, and these specifications. The requirements of MCP-538, Control of Non-Conforming Items" shall also be addressed.

Standard Products: The materials and equipment furnished by the Subcontractor shall be standard products of manufacturers regularly engaged in the production of the type of materials and equipment required and shall be of the manufacturer's latest standard designs. Where two or more units of the same type and class of material or equipment are required, the units shall be the product of the same manufacturer, and shall be identical insofar as possible. The component parts of a unit of equipment need not be the products of the manufacturer.

SAFETY, HEALTH AND ENVIRONMENT:
In general work shall be in compliance with the applicable sections of 29 CFR 1910, 29 CFR 1926, the project HASP, and the BBWI Subcontractor Requirements Manual.

DELIVERY, STORAGE AND HANDLING:
All materials normally packaged shall be delivered to the site in the original, unopened packages with labels intact. Upon arrival, the Subcontractor shall inspect the materials or equipment for damage.

Materials and equipment shall be stored and handled in accordance with the manufacturer's instructions. Protect construction materials, equipment, flange facings, threads, machined or painted, and other exposed finished surfaces from damage.

PART 2--PRODUCTS

MATERIALS:
New Materials and Equipment: Materials and equipment received by the Subcontractor in a damaged condition shall be repaired or replaced by the Subcontractor as directed by the Contractor. Materials and equipment damaged by the Subcontractor shall be repaired or replaced by the Subcontractor.

Approved Equal: Whenever a product is specified by using a proprietary name, the name of a manufacturer, or vendor, the specific item mentioned shall be understood as establishing type, function, dimension, and quality desired. Other manufacturer's products will be accepted, provided sufficient information is submitted to determine that products proposed are equivalent to those named.

Existing Materials, Equipment and Structures: Existing materials, equipment and structures, including paint and protective coatings, involved under this Subcontract shall be thoroughly inspected by the Subcontractor before starting any work. Any defects or damages, the repair of which are not covered under these specifications or subcontract drawings, shall be reported in writing to the Contractor by the Subcontractor. The Subcontractor shall place reinstalled operating equipment in an operating condition that is at least as good as it was at the time the Subcontractor started work.

Hazardous Chemicals and Substances: The Subcontractor shall comply with applicable requirements of 29 CFR 1926.59, Hazard Communication Standard.

PART 3--EXECUTION

CONSTRUCTION AND INSTALLATION:

General: Materials and equipment shall be erected or installed only by qualified personnel who are trained per INEEL requirements and regularly engaged in the trades required to complete the work. The subcontract drawings show the general arrangement and space allocation of the equipment specified. It shall be the Subcontractor's responsibility to verify changes in conditions or rearrangements necessary because of substitutions for specified materials or equipment. Where rearrangements are necessary the Subcontractor shall, before construction or installation, prepare and submit drawings of the proposed rearrangement for approval.

Coordination of Work: Where new work and existing facilities are shown on the drawings, but are not located precisely by dimensions, the Subcontractor shall be responsible for proper location and clearances and for correcting discrepancies and interferences in the work that are a result of his operations. Work done by one trade that must be integrated with work of other trades shall be laid out with due regard to the work done, or to be done, by other trades; particularly if the work done by one trade depends upon completion or proper installation of work done by other trades. The Subcontractor shall cooperate in coordinating his work with work being done by others if their work must be integrated with the Subcontractor's work. The Subcontractor shall notify the Contractor at least one week prior to starting of the date on which the Subcontractor proposes to proceed with the work.

Workmanship: Work shall be done in a skillful and workmanlike manner.

REPAIR AND RESTORATION:
Materials and equipment repaired or replaced by the Subcontractor shall be subject to acceptance by the Contractor.

PROTECTION:
Construction materials, equipment, flange facings, threads, machined or painted, and other exposed finished surfaces shall be protected from damage during construction.

END OF SECTION 01005

SECTION 01051--CONSTRUCTION SURVEYING AND STAKING

PART 1--GENERAL

SUMMARY:

Section Includes: Work includes, but is not limited to:

The subcontractor will furnish all materials, labor, tools, and equipment to perform surveying. The subcontractor will perform surveying to ensure that the proper grades, lines, and levels are established as set forth in these specifications and as shown on the design drawings. The construction survey will be completed under the supervision of a Registered Professional Land Surveyor licensed in the State of Idaho.

Related Sections:

a) Section 02200, Earthwork
b) Section 02486, Revegetation.

Work to be Performed by Others:

The Contractor will:

a) Review and approve data submittals as required by this specification
b) Provide INEEL survey grid information
c) Provide benchmarks, strategically located, as shown on design drawings
d) Inspect work for compliance with this specification, in addition to inspection by the subcontractor.
e) Perform final inspection and acceptance of water diversion and control work.

SUBMITTALS:

Procedures:

a) The subcontractor will submit within eight work days after notice to proceed, a plan for the work, including descriptions of survey equipment, procedures used to establish temporary or permanent benchmarks or measurements, field notes, calculations, reductions, closures, and documentation for any benchmarks or monuments to the contractor for approval.
b) Data will be reduced and plotted by the subcontractor in a form acceptable to the contractor. Legible notes, drawings, and reproducible documentation will be submitted to the contractor for approval. Contour intervals will be 0.5 ft. In addition to the above notes submittals, all plans will also be submitted in electronic format. Data files shall be submitted in ASCII format and drawing files shall be submitted in AutoCAD 2002 format on CD-ROM.

Certifications:

a) Provide evidence of surveyor's current registration in the State of Idaho.
b) Prior to grading or placing fill at the site, the subcontractor will perform a survey of the existing subgrade, if necessary, to confirm to his satisfaction the adequacy of the existing topography as shown on the drawings. The Subcontractor will submit a letter to the contractor stating acceptance of the accuracy of the existing topography shown on the contract drawings, or will otherwise advise of discrepancies or omissions for further resolution. Construction work in each respective area will not begin until agreement is reached on the adequacy of the existing topographic information.

Records: The subcontractor will submit to the contractor for information, all field notes from surveying and layout activities within four work days after completion of each stage of these activities at each respective site.

QUALITY CONTROL:
Qualifications: Construction surveying and staking shall be accomplished under the direction of a registered professional land surveyor licensed in the State of Idaho.

PART 2--PRODUCTS

Stakes: Identification stakes and hubs shall be of sufficient length, width and depth to provide a solid set in the ground and to provide space for marking above ground when applicable. The top 2 in. of all slope, guard, reference, clearing, and structure stakes shall be painted or marked with plastic flagging.

Monuments: Permanent monuments shall be supplied and placed in accordance with applicable INEEL, State and Federal standards and as shown in the drawings. Concrete markers shall be US Army Corps of Engineers Type I Bronze disks 3 ½ in. in diameter (Berntsen Item # C35BD, www.berntsen.com or equal).

PART 3--EXECUTION

SURVEY REQUIREMENT:
Precision: Precision and accuracy requirements are contained in Table 1. Precision B shall be used.

Control: Prior to commencement of construction work, the subcontractor will establish survey control points inside the work areas. Survey control points will be established so that any point within the job site can be accurately reestablished and elevations be obtained to the required tolerances at any time during the construction. The subcontractor will verify all baselines, and horizontal and vertical control benchmarks stipulated in the information provided by the contractor.

Slope Stakes and Reference Stakes: Slope catch-points and slope reference stakes shall be established. The position of these stakes shall be determined by methods that will produce on the ground the precisions shown in the Table 1.

The elevation and location of slope reference stakes shall be verified for accuracy by a differential level run over the reference stakes between benchmarks.

Monuments of Property Boundaries or Surveys of Other Agencies: If property boundary or survey monuments, or survey markers of other agencies, are found within or adjacent to the construction limits, the Subcontractor shall immediately notify the Contractor's Representative. These monuments shall not be disturbed.

Grade Finishing Stakes: Stakes shall be set on a 50-ft grid and at the shoulders. Subgrade finishing stakes shall be red tops and finish grade stakes shall be blue tops.

Finishing stakes shall be set when subbase is within 0.2 ft, or topsoil is within 0.1 ft of final grade. The stakes shall be set to the nearest 0.01 ft of the measured grade line.

TABLE 1. CROSS SECTION AND SLOPE-STAKE PRECISION

Item	Precision A	Precision B	Precision C
Allowable deviation of cross section line projection from a true perpendicular to tangents, a true dissector of angle points, or a true radius of curves.	±2_	±3_	±3_
Cross section topography measurements shall be taken so that variations in ground from a straight line connecting the cross section points will not exceed:	0.5 ft	1.0 ft	2.0 ft
Horizontal and vertical accuracy for cross sections. In feet or percentage of horizontal distance measured from transverse line, whichever is greater.	.05 ft or 0.2%	0.15 ft or 0.6%	0.2 ft or 1.0%
Horizontal and vertical accuracy for slope stake, slope stake references, and clearing limits. In feet or percentage of horizontal distance measured from centerline or reference stake, whichever is greater.			
a. Slope reference stakes and slope stakes.	0.1 ft or 0.4%	0.15 ft or 0.6%	0.2 ft or 1.0%
b. Clearing limits.	1.0 ft	1.0 ft	1.0 ft

Bronze Marker Installation: Install bronze markers per manufacturer's instructions and INEEL standards.

FIELD QUALITY CONTROL:
The subcontractor is responsible for controlling lift thickness to ensure conformance to the required dimensions. The subcontractor will be responsible for establishing, recording, protecting, and maintaining all permanent and temporary horizontal and vertical control benchmarks.

Surveillance will be performed by the Contractor's Representative to verify compliance of the work to the drawings and specifications.

END OF SECTION 01051

SECTION 02200--EARTHWORK

PART 1--GENERAL

SUMMARY:

Section Includes, but is not limited to:

- Clearing and grubbing as required.
- Excavating all materials encountered, of every description, for completion of the Subcontract as shown on the drawings and as specified herein.
- Backfilling of all excavation for monument foundations, etc.
- Burn pit cap construction.
- Compacting all backfill and sub-grade as specified herein.
- Finish grading and grading for surface drainage.

REFERENCES:

The following documents, including others referenced therein, form part of this Section to the extent designated herein.

AMERICAN ASSOCIATION OF STATE HIGHWAY TRANSPORTATION OFFICIALS (AASHTO)

AASHTO	Standard Specifications for Transportation Materials and Methods of Sampling and Testing
AASHTO M145	Recommended Practice for the Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes
AASHTO M288	Standard Specification for Geotextile Specification for Highway Applications
AASHTO T11	Standard Method of Test for Materials Finer Than 75 Micrometer (No. 200) Sieve in Mineral Aggregates by Washing
AASHTO T27	Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates
AASHTO T99	Standard Method of Test for the Moisture-Density Relations of Soils Using a 5.5 lb Rammer and a 12 in. Drop
AASHTO T238	Standard Method of Test for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

CODE OF FEDERAL REGULATIONS

29 CFR 1926	OSHA Safety and Health Regulations for Construction, Subpart P

IDAHO TRANSPORTATION DEPARTMENT (ITD)

SSHC	Standard Specification for Highway Construction

SUBMITTALS:

For approval: Prior to purchase, monument materials, including manufacturer certification of compliance with the performance requirements of this specification.

For approval: Prior to mobilization, schedule for the work, including time, work plan, equipment to be used, and proposed superintendent resume.

Work by Others:

None.

PART 2--PRODUCTS

MATERIALS:

General Backfill Satisfactory Soil Materials: Satisfactory soil materials are defined as those complying with AASHTO M145, soil classification Groups A-1, A-2-4, A-2-5.

General Backfill Unsatisfactory Soil Materials: Unsatisfactory soil materials are those defined in AASHTO M145 soil classification Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7; also peat and other highly organic.

General Backfill and Fill Material: "Satisfactory" soil materials free of rock, gravel larger than 3 in. in any dimension, debris, waste, frozen materials, vegetable and other deleterious matter. Select pit run gravel is available at the TAN gravel pits. Gravel pit material and use of the gravel pits shall be at no cost to the Subcontractor. Upon completion of operations involving fill material removal, the Subcontractor shall grade and reshape the disturbed areas. Sloped surfaces shall meet the requirements of OSHA 29 CFR 1926. Coordinate gravel pit use with Mike Jackson-526-8872.

Aggregate Base or Leveling Course Material: Naturally or artificially graded mixture of ¾ in. maximum size crushed gravel, crushed stone, natural and crushed sand. Material shall meet the requirements of ITD SSHC subsection 703.04.

Topsoil: Natural, friable surface soil of organic character suitable for agricultural purposes. Topsoil shall be free of objectionable quantities of subsoil, roots, stones, or other deleterious substances.

Sand Bedding: AASHTO M145, soil classification Group A-3.

Water: Water for use in obtaining optimum moisture content and dust control will be made available from hydrants at TAN. The Subcontractor shall be responsible for transporting water to the jobsite.

PART 3--EXECUTION

EXCAVATION:

Clearing and Grubbing: All areas under monument footings shall be stripped and cleared of all brush, weeds, rubbish and organic matter. All vegetable matter, roots, brush and debris encountered during the stripping operations shall be removed from the cleared areas to a depth of at least 4-in. below the sub grade. Resulting depressions shall be completely backfilled and compacted in accordance with the applicable part of these specifications except in those cleared areas where further excavation is required. Stripped material shall be stockpiled or disposed of as specified hereinafter. No clearing or grubbing shall be permitted within the designated burn pit boundaries

Earth Excavation: Earth excavation includes removal and disposal of pavements and other obstructions visible on ground surface, underground structures and utilities indicated to be demolished and removed, soil material of any classification, and other materials encountered that are not classified as oversize debris excavation or unauthorized excavation. No earth excavation shall be permitted within the designated burn pit boundaries.

Oversize Debris Excavation: Oversize debris excavation consists of removal and disposal of materials encountered requiring use of special equipment. No oversize debris excavation shall be permitted within the designated burn pit boundaries.

Unauthorized Excavation: Unauthorized excavation consists of removal of materials beyond indicated elevations or dimensions without specific direction by the Contractor. Unauthorized excavation, as well as remedial work directed by the Contractor, shall be at the Subcontractor's expense.

Structural: Excavations for monument footings shall be made to the depths shown on the drawings and of sufficient width to allow adequate room for setting and removing forms, installing accessories and inspection. Where concrete foundations or slabs are to be constructed on material other than rock, care shall be taken to prevent disturbing the bottom of the excavation. Excavation to final grade shall not be made until just before concrete forms are to be placed therein.

Unstable Soils: If wet or otherwise unsatisfactory soil is encountered in an excavation, at or below the excavation line, it shall be brought to the attention of the Contractor. The bottom of the excavation shall then be brought to the required grade with concrete or compacted backfill as specified hereinafter. Excavation of unstable soil resulting from the Subcontractor's neglect to keep the excavated opening dry, and other over depth excavation not required to satisfactorily complete the work, shall be brought up to the required grade with concrete or compacted backfill as specified hereinafter at the Subcontractor's expense. No excavation shall be permitted in areas designated as within burn pit boundaries.

Control of Water: All excavations shall be kept free of standing water. The Subcontractor shall furnish, install and operate the equipment required to keep excavations free from water at all times. Water shall be disposed of in a manner that will not cause injury to property.

HAULING OF EXCAVATED MATERIAL

Unlisted Material: Material determined not to contain listed waste by the Contractor in accordance with the HASP may be applied to a beneficial use at the site or disposed of as uncontrolled fill by the subcontractor.

BACKFILL OR FILL:

General: The excavations shall be cleared of all trash and debris prior to backfilling or filling. All backfill or fill material shall be free from trash, organic matter and frozen particles. Backfilling or filling shall be done only when approved by the Contractor. Existing stockpile at the site may be used for backfill insofar as it complies with the requirements of this specification.

Under Monument Footings: Backfill or fill materials under monument footings shall be compacted fill material as specified in the "Materials" section, except that the last 2 in. of such fill shall be compacted leveling course material.

Subgrade Placement: Concentrated dumping of backfill or fill material into excavations will not be permitted. No water shall be used for placing, settling or compacting backfill or fill except to obtain optimum moisture content. Fill material shall be placed in uniform layers not to exceed 6 inches. loose measurement, and compacted with a minimum of eighteen passes of a tamping roller until the elevation of the pit is level with the surrounding ground surface. Fill above the level of the existing ground surface must be placed in uniform layers not to exceed 8 in. loose measurement.

Topsoil Placement: Before placing topsoil, scarify subgrade to a depth of 2 inches by use of disks or spike tooth harrows. Spread topsoil uniformly and compact to a depth of 6 inches at 85% of maximum density at optimum moisture content.

Compaction: Unless otherwise indicated on the drawings or specifications, compact all backfill and fill material. Unless otherwise indicated, all "compacted" backfill or fill shall be compacted to at least 90% of maximum density at optimum moisture content as determined by AASHTO T99. Backfill under roadways and other areas scheduled to receive traffic loads shall be compacted to at least 95% of maximum density at optimum moisture content as determined by AASHTO T99. Unless otherwise noted, loose measurement lifts shall be 8 inches maximum. Each lift shall be compacted before the next lift is placed thereon. Compacted backfill or fill density and moisture content may be measured by the Contractor at any location and depth. Sections of backfill or fill failing to meet the minimum compaction requirements shall be corrected prior to placement of subsequent lifts.

EQUIPMENT:

Watering Equipment: Provide water tank trucks capable of applying a uniform unbroken spread of water over the surface. A suitable device for positive shut-off and regulation of flow shall be located to permit operation by driver in cab.

FIELD QUALITY CONTROL:

Surveillance will be performed by the Contractor's Representative to verify compliance of the work to the drawings and specifications.

END OF SECTION 02200

SECTION 02486--REVEGETATION

PART 1--GENERAL

SUMMARY:

Section Includes: Work includes, but is not limited to:

The subcontractor will furnish all labor, materials, labor, tools, and equipment, and place seed and mulch in accordance with this specification and as indicated on the design drawings. This section describes the subcontractor's requirements to provide a final vegetated surface in those areas designated herein or as shown on the drawings. These designated areas will be seeded and mulched as set forth in this section and on the design drawings.

Related Sections:

Section 02220, Earthwork

Work to be Performed by Others:

The contractor will:

a) Review and approve data submittals as required by this specification
b) Have the option to inspect equipment, work, and materials for compliance with the requirements of this specification, in addition to inspection by the subcontractor
c) Have the option to review preseeding conditions and other related job conditions during performance of the work
d) Perform inspection and acceptance of the final vegetated surfaces.

REFERENCES:

The following documents, including others referenced therein, form part of this Section to the extent designated herein.

United States Department of Agriculture (USDA)

Federal Seed Act

State of Idaho

Idaho Pure Seed Law, Chapter 4, Title 22, Idaho Code

INEEL Health, Safety and Hazards Prevention Documents

Comprehensive RD/RA Work Plan for the Test Area North OU I-10, Selected Sites.

SUBMITTALS:

Procedures: The subcontractor will submit a Seeding and Mulching Plan to the contractor for written approval within eight working days after notice to proceed. The plan will describe the methods of placement and the equipment to be used during operations.

Certifications: The following certifications are required:

a) The subcontractor will submit eight working days prior to use, the seed vendor's certified statement for the seed mixture required, stating scientific and common names, percentages by weight, and percentages of purity and germination. The Subcontractor will submit a signed statement certifying that the seed is from a lot that has been tested by a recognized laboratory for seed testing within six months prior to the date of delivery to the construction site.

b) The subcontractor will submit a letter to the contractor verifying conformance to the requirements identified in this specification within four working days after completion of the work specified herein.
c) The Subcontractor shall submit a written warrantee guaranteeing the work for one year from date of acceptance by the contractor.

RECORDS: The subcontractor will submit records of inspection to the contractor within four working days after completion of the inspection.

PART 2--PRODUCTS

MATERIALS:
Seed Mix: Seed will be labeled in accordance with United States Department of Agriculture rules and regulations under the Federal Seed Act and Idaho Pure Seed Law. Seed will be furnished in sealed bags or containers clearly labeled to show the name and address of the supplier, the seed name, the lot number, net weight, origin, the percentage weed seed content, the guaranteed percentage of purity and germination, pounds of live seed (PLS) of each seed species, the total pounds of live seed in the container, and the date the of the last germination test that will be within a period of six months prior to commencement of planting operations. Seed will be from a current or previous year's crop. Each variety of seed will meet the requirements of the Idaho Pure Seed Law.

SPECIES	RATE OF APPLICATION (POUNDS PER ACRE PURE LIVE SEED)
"Critanna" Thickspike Wheatgrass, Elymus lanceolatus var critanna	3
"Sodar" Streambank Wheatgrass, Elymus lanceolatus var sodar	3
Rimrock Indian Ricegrass, Achnatharium hymenodes var rimrock	4
Wyoming Big Sagebrush, Artemisia tridentaka ssp. Wyomingensis	1
Winterfat, Ceratoides lanata	2
Total	13

Fertilizer: Fertilizer composition shall be as determined by soil testing the new graded topsoil in four locations as approved by the Contractor. Each component of the fertilizer may vary two percent.

EQUIPMENT:
Seedbed Preparation: Disks, harrows, roller harrow-packers (culti-packers), tooth type harrows, shovels, or other similar equipment.

Seeding and Fertilizing: Drills with double disc and agitator, ground driller hand seeder, culti-packer with seed boxes, Brillion seeder, or other similar equipment.

PART 3--EXECUTION

Season of Work: Seeding shall be done between November 15 and December 15. Specific ideal seeding times within these windows shall be as required for proper seedbed preparation.

Weed Control: Areas to be seeded shall be maintained reasonably free of weeds. Weeds shall be kept from going to seed.

Seedbed Preparation: Soil shall be tilled a minimum depth of 4 inches**.** The seedbed shall be firm below seeding depth and well-pulverized and loose on top. It shall be free of clods and weeds. Seedbed preparation shall not be performed when soil conditions are not suitable for tilling: too dry, too wet, frozen, etc. Tillage shall produce cross-slope furrows on slopes.

On areas subject to severe erosion, the extent of seedbed preparation shall not exceed that which can be seeded in one day.

Fertilizing: Fertilizing shall closely follow seedbed preparation. Fertilizer shall not be mixed with seed. Fertilizer may be drilled or broadcast. Fertilizer shall be applied as determined by the results of soil testing.

Seeding: Seeding shall closely follow fertilizing. If the seedbed has been disturbed, then the Subcontractor shall prepare the seedbed again. Seeding work shall not proceed until the seedbed has been inspected. Seeds shall be thoroughly mixed prior to application. Seeds shall be uniformly applied at the previously specified rate. Seeds shall be buried 0.25 to 0.75 inches. Seeding shall not be performed when weather conditions are unfavorable: high wind, heavy rain, etc.

Protection: Traffic over seeded area shall be prohibited.

FIELD QUALITY CONTROL:
Seedbed Inspection: Seeding shall not proceed until the Contractor's Representative has inspected the seedbed for conformance to these specifications.

Surveillance will be performed by the Contractor's Representative to verify compliance of the work to the drawings and specifications.

END OF SECTION 02486

Project Title:	**WAG 1, Operable Unit 1-10, Group 3, WRRTF-01 Burn Pits Remedial Design**		
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SECTION 02840 -- SITE MONUMENTS

PART 1--GENERAL

SUMMARY

Work Included

The Subcontractor shall furnish all materials, labor, tools, and equipment to construct and install the site monuments in accordance with this specification and as shown on the design drawings.

Related Sections:

1) Section 03300 Cast-in-Place
2) Section 01051 Construction Surveying and Staking

Work to be Performed by Others

The Contractor will:

1) Review and approve data submittals required by this specification;
2) Have the option to inspect work for compliance with the requirements of this specification, in addition to inspection by the Subcontractor;
3) Review pre-installation conditions, installation, and other job conditions during performance of the work, and
4) Perform final inspection and confirm acceptance of the individual site markers.

REFERENCE DOCUMENTS

American Society for Testing and Materials

ASTM C 170 Compressive Strength of Dimension Stone

SUBMITTALS

Data:

The Subcontractor shall submit the proposed site marker catalog cuts or shop drawings to the Contractor for written approval 8 work days prior to procurement.

Test Reports:

The Subcontractor shall submit material test reports to the Contractor for written approval 8 work days prior to procurement.

Procedures:

The Subcontractor shall submit a description of the methods for connection, repair, and/or replacement of the site monuments not in accordance with the requirements of this specification to the Contractor for written approval within 8 work days after notice to proceed.

Certifications:

The Subcontractor shall schedule a meeting in the field with the Contractor to inspect the installation of the site monuments. The Subcontractor shall submit a letter to the Contractor within 4 work days after completion verifying conformance to the requirements identified in this specification.

Records

1) The Subcontractor shall submit records of inspection to the Contractor within 4 work days after completion of the inspection. Inspection records shall include on-site inspection records of the site monuments.
2) The Subcontractor shall submit to the Contractor for information all field notes from surveying and/or layout activities within 4 work days after completion of these activities.

PART 2--PRODUCTS

EQUIPMENT AND MATERIAL REQUIREMENTS

Equipment:

All equipment and tools shall comply with the safety requirements of the Project Specific Health and Safety Plan (HASP).

All equipment and tools used by the Subcontractor to perform the work shall be subject to inspection by the Contractor before the work is started and shall be maintained in satisfactory working condition at all times.

The Subcontractor's equipment shall be adequate for and have the capability to produce the product as indicated herein.

Site Monuments:

1) Monuments shall be constructed of granite with a minimum compressive strength of 20,000 psi as determined by ASTM C 170. Prior approval of material submittals by the Contractor may be used in lieu of satisfying strength requirements.
2) Monument materials shall consist of one homogeneous mass and be free of significant fracture faces.
3) Monuments shall be furnished in dimensions, as shown on the design drawings.
4) All monuments shall be constructed by an established manufacturer of such monuments, or shall be approved by the Contractor.
5) Symbols shall be etched, carved, or sandblasted onto the face of the monuments, as shown on the design drawings.
6) The Subcontractor shall provide full scale engraving template for review and approval 4 work days prior to use.

PART 3--EXECUTION

SITE MONUMENTS

Monuments shall be constructed as shown on the design drawings.

TRANSPORT OF MONUMENTS

The Subcontractor shall transport the monuments in accordance with the manufacturer recommendations.

The Subcontractor shall utilize the proper lifting equipment to unload the monuments at the site. Damage to the monuments shall be documented and reported to the Contractor prior to placement.

PLACEMENT OF MONUMENTS

The Subcontractor shall assemble and erect the monuments as specified herein and on the design drawings, in accordance with any instructions furnished by the monuments manufacturer.

Where necessary, the Subcontractor shall adjust the grade for the monuments location to match the contours shown on the design drawings.

Site monuments and associated concrete foundations requiring placement shall be assembled in accordance with the design drawings and Section 03300 of these specifications.

ACCEPTANCE

Installation of the site monuments and foundations for the monuments not in accordance with the materials and method requirements of this specification shall be repaired and/or replaced by the Subcontractor. The Subcontractor shall submit the repair and/or replacement methods to the Contractor for written approval before use.

END OF SECTION 02840

SECTION 03301-- CONCRETE

PART 1--GENERAL

SUMMARY:

Section Includes: Work includes, but is not limited to:

Footings and foundations. Concrete slabs for CERCLA monuments may be cast in place or precast in accordance with the terms of this specification.

Epoxy Grout for bronze marker installation.

REFERENCES:

The following documents, including others referenced therein, form part of this Section to the extent designated herein. The ASTM specifications referred to herein are a part of ACI 301.

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 301	Specifications for Structural Concrete for Buildings
ACI 318	Building Code Requirements for Reinforced Concrete

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 615	Standard Specification for Deformed and Plain Billet-Steel Bar for Concrete Reinforcement
ASTM C 33	Standard Specification for Concrete Aggregates
ASTM C 150	Standard Specification for Portland Cement
ASTM C 260	Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C 309	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C 494	Standard Specification for Chemical Admixtures for Concrete
ASTM C 618	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
ASTM C 845	Standard Specification for Expansive Hydraulic Cement

SUBMITTALS:

Submittals include, but are not limited to the following:

Mix Design: Submit mix designs for concrete used and grout material.

Batch Tickets: Supply a copy of the batch ticket with each load of concrete.

Precast Slab: Prior to fabrication submit shop drawings, written handling instructions, and vendor qualifications for precast slabs. Vendor shall demonstrate not less than three years continuous and current experience in the design, fabrication, handling, and transportation of precast concrete elements. Shop drawings shall be stamped by a professional engineer registered in the State of Idaho.

QUALITY CONTROL:

Comply with provisions of ACI 301 unless otherwise specified herein.

PART 2--PRODUCTS

FORM MATERIALS:

Forms for Concrete: Furnish in largest practicable sizes to minimize number of joints. Comply with applicable provisions of ACI 301.

Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain, nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.

REINFORCING MATERIALS:

Reinforcing Bars: ASTM A 615, Grade 40, deformed, as indicated on the drawings.

Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing in place.

CONCRETE MATERIALS:

Portland Cement: Cement shall conform to ASTM C 150, Type I-II. The cement shall contain no more than 0.60% by weight of alkalies calculated as ($Na_2O + 0.658\ K_2O$).

Pozzolans: Pozzolans (fly ash) shall conform to ASTM C 618 Class F, except that the loss on ignition (LOI) shall be less than 2%.

Aggregate: Fine and coarse aggregate shall conform to ASTM C 33.

Mixing Water: Potable having no pronounced taste or odor, and containing no deleterious materials.

Air-Entraining Agents (AEA): ASTM C 260.

Water-Reducing Admixtures: If water-reducing admixtures are used they shall conform to ASTM C 494, Type A, and contain no more than 1% chloride ions.

Calcium Chloride: Calcium chloride is not permitted.

GROUT MATERIALS:

Expansive hydraulic cement meeting the requirements of ASTM C 845, type K or epoxy grout as approved by the Contractor.

RELATED MATERIALS:

Curing Compound: Curing compound or curing-hardener-sealer compound shall comply with ASTM C 309, Type I, Class A.

The compound shall be compatible with adhesives or paints if it is to be applied in areas to receive paint or floor covering requiring adhesives.

PROPORTIONING AND DESIGN OF MIXES:

Mix Design: Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 318.

Design mixes to provide normal weight concrete with the following specified 28-day compressive strengths, minimum, as indicated on drawings and schedules:

Class 40: 4000 psi (structural concrete)
Class G: 3000 psi (grout)

See ACI 301, Chapter 17 for acceptance criteria.

The concrete mix may contain a pozzolan (fly ash). When fly ash is used, the minimum amount shall be 15% by weight of the total cementitious materials unless otherwise approved.

Durability: Concrete shall be air-entrained and shall have a minimum 28-day compressive strength of 4,000 psi and a maximum water-cement ratio of 0.45. Add air entraining agent (AEA) at the manufacturer's prescribed rate to result in concrete at point of placement having air content complying with ACI 301.

MIXING AND DELIVERY:
The manufacture and delivery of all concrete shall conform to ACI 301. Hand-mixed concrete is permitted only for grouting of survey markers.

Concrete that is rejected for failure to meet any of the above requirements will be evaluated by the Contractor and may be removed and replaced at the expense of the Subcontractor.

SOURCE QUALITY CONTROL:
The Subcontractor shall provide the necessary testing and monitoring to qualify proposed materials and establish mix designs.

PART 3--EXECUTION

FORMS:
Comply with ACI 301.

PLACING REINFORCEMENT:
Comply with ACI 301.

Splicing of reinforcement shall be in accordance with ACI 318, Chapters 7 and 12. All splices shall be Class B tension splices for regular bars.

JOINTS:
No joints shall be permitted.

CONCRETE PLACEMENT:
Comply with ACI 301.

FINISH OF FORMED SURFACES:
Strike off smooth with top of form

CONCRETE CURING AND PROTECTION:
Comply with ACI 301.

REMOVAL OF FORMS:
Comply with ACI 301.

CONCRETE SURFACE REPAIRS:
Comply with ACI 301.

FIELD QUALITY CONTROL:
Subcontractor Supplied Testing: The Subcontractor shall provide the necessary testing and monitoring services for the following:

Testing services needed by the Subcontractor to control or monitor the production, transportation, placement, protection, curing or temperature of the concrete.

The use of Contractor supplied inspection or testing services shall in no way relieve the Subcontractor of the responsibility to furnish materials and construction in full compliance with the subcontract documents.

Contractor Supplied Testing: The Contractor's Representative will perform tests during placement and curing of the concrete. Monitoring of concrete protection and curing methods may also occur.

Sampling and testing for quality control during placement of concrete may include any of the tests specified in ACI 301 1.6.

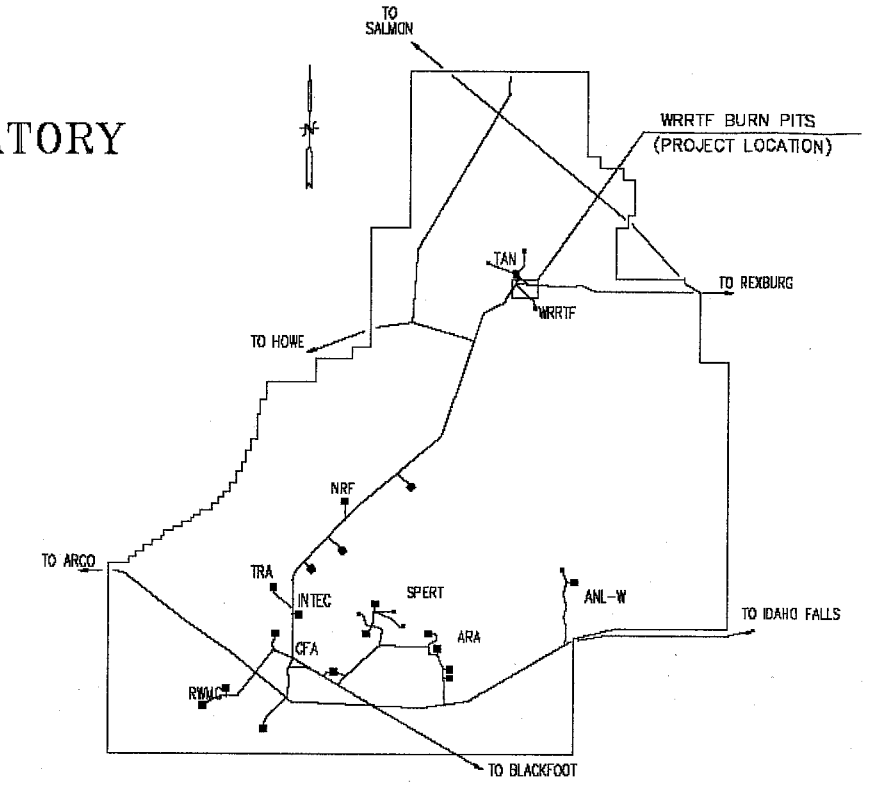
END OF SECTION 03301

U.S. DEPARTMENT OF ENERGY

IDAHO NATIONAL ENGINEERING & ENVIRONMENTAL LABORATORY

TEST AREA NORTH OU 1-10

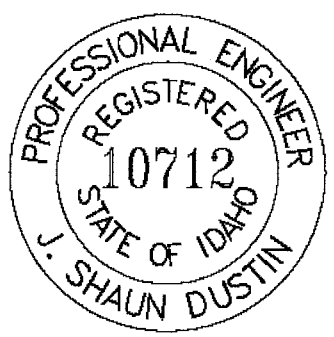
WRRTF-01 BURN PITS II AND IV



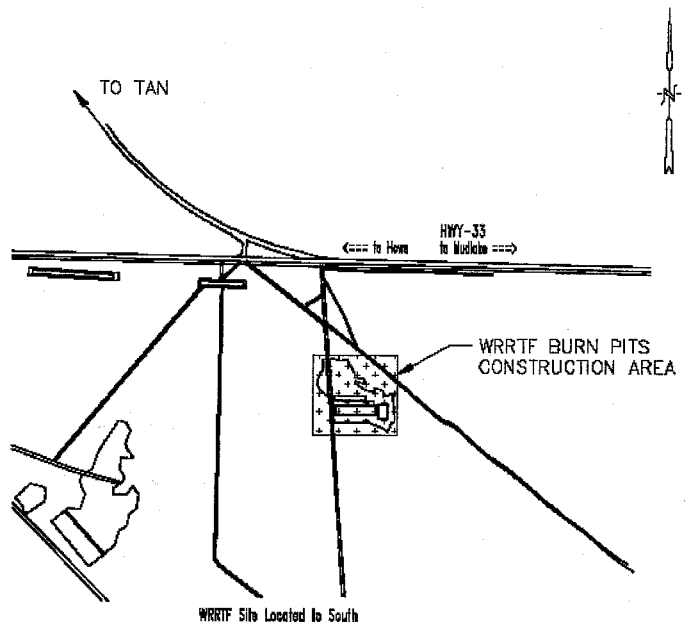
VICINITY MAP
NOT TO SCALE

INDEX OF DRAWINGS

DRAWING NO.	A/E SH NO	REV	TITLE
10411	G-1	0	TITLE SHEET & INDEX
10412	G-2	0	BURN PITS II & IV SITE LAYOUT PLAN
10413	G-3	0	BURN PIT II BOREHOLE PLAN & PROFILE
10414	G-4	0	BURN PIT IV BOREHOLE PLAN & PROFILE
10415	C-1	0	BURN PITS II & IV GRADING PLAN
10416	C-2	0	BURN PITS II & IV MONUMENT PLAN



REVISION: 0
ORIGINAL SIGNED BY:
Shaun Dustin
SEAL NUMBER: 10712
DATE ORIGINAL SIGNED:
12/3/2003
ORIGINAL STORED AT:
Intrepid Technology & Resources



PROJECT LOCATION
NOT TO SCALE

REV	DATE	DESCRIPTION	DESIGN	APP'D BY

NOTES

REFERENCE DRAWINGS

DRAWING NO.	DRAWING TITLE

OU 1-10 WRRTF-01
TITLE SHEET & INDEX

intrepid technology & resources incorporated
501 W. BROADWAY, SUITE 200, IDAHO FALLS, ID 83402
(208)529-5337 FAX: (208)529-1014

G-1

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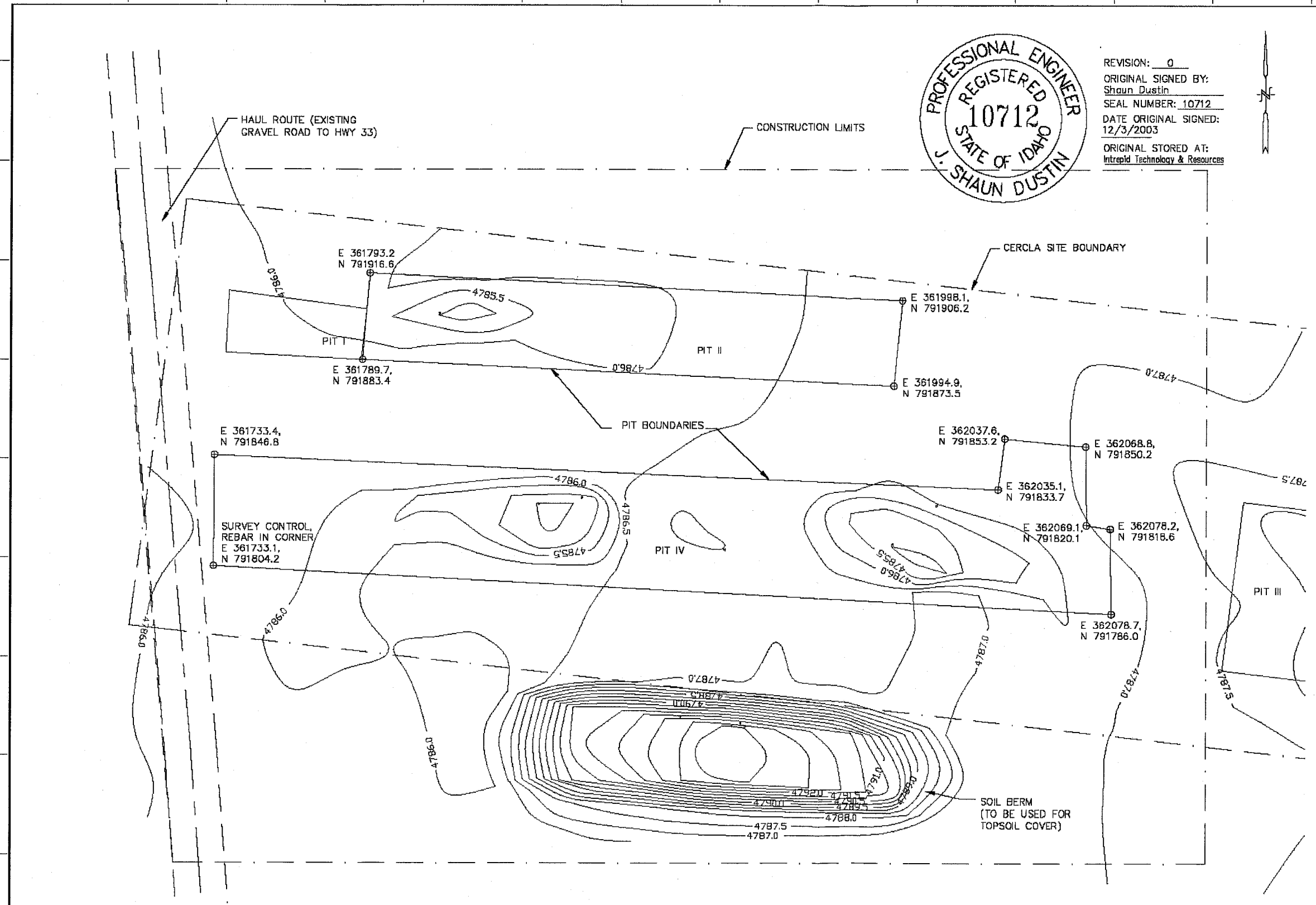

EXISTING PIT TOPOGRAPHY
AND CONTROL POINTS

SCALE 1"=20'

PROFESSIONAL ENGINEER
REGISTERED
10712
STATE OF IDAHO
J. SHAUN DUSTIN

REVISION: 0
ORIGINAL SIGNED BY:
Shaun Dustin
SEAL NUMBER: 10712
DATE ORIGINAL SIGNED:
12/3/2003
ORIGINAL STORED AT:
Intrepid Technology & Resources

REV	DATE	DESCRIPTION	DESIGN	APP'D BY

NOTES

1) CONFINE EQUIPMENT TO CONSTRUCTION LIMITS SHOWN ON DRAWING.

2) NO EXCAVATION SHALL BE PERMITTED WITHIN PIT BOUNDARIES.

2) ALL HAUL TRAFFIC SHALL BE CONFINED TO DESIGNATED HAUL ROUTES.

REFERENCE DRAWINGS

DRAWING NO.	DRAWING TITLE

OU 1-10 WRRTF-01
BURN PITS II & IV
SITE LAYOUT PLAN

intrepid technology & resources
incorporated
501 W. BROADWAY, SUITE 200, IDAHO FALLS, ID 83402
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G-2

DRAWN: JSD	12/3/03	TASK ORDER NUMBER	
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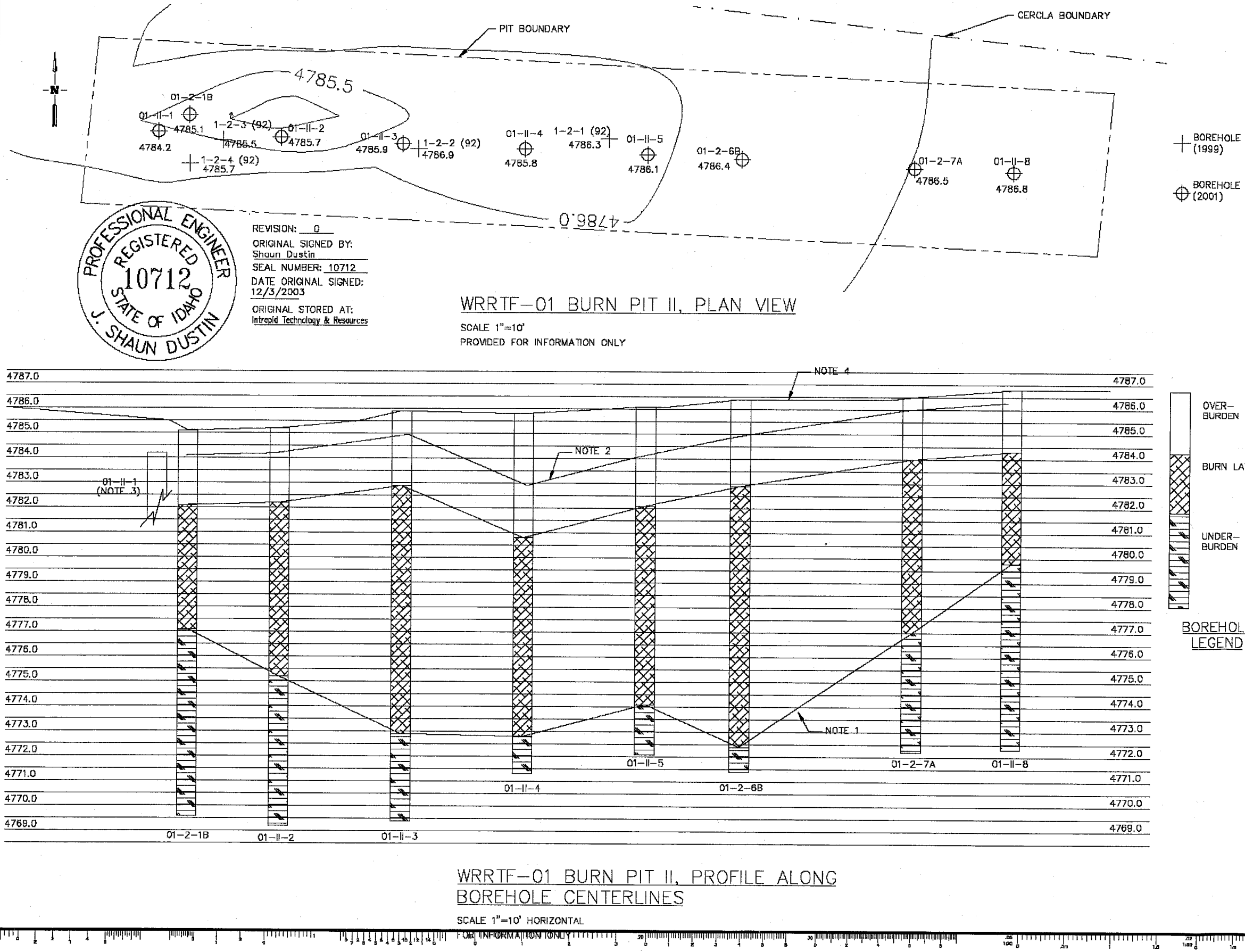

PROFESSIONAL ENGINEER
REGISTERED
10712
STATE OF IDAHO
J. SHAUN DUSTIN

REVISION: 0
ORIGINAL SIGNED BY: Shaun Dustin
SEAL NUMBER: 10712
DATE ORIGINAL SIGNED: 12/3/2003
ORIGINAL STORED AT: Intrepid Technology & Resources

WRRTF-01 BURN PIT II, PLAN VIEW

SCALE 1"=10'
PROVIDED FOR INFORMATION ONLY

OVER-BURDEN
BURN LAYER
UNDER-BURDEN

BOREHOLE LEGEND

WRRTF-01 BURN PIT II, PROFILE ALONG BOREHOLE CENTERLINES

SCALE 1"=10' HORIZONTAL
FOR INFORMATION ONLY

REV	DATE	DESCRIPTION	DESIGN	APPD BY

NOTES

1) LAYER INTERFACES INTERPOLATED GRAPHICALLY FROM 2001 BOREHOLE DATA.

2) MINIMUM DEPTH OF COVER OVER BURN LAYER PER ROD REQUIREMENTS

3) ELEVATION GIVEN FOR POINT IS INCONSISTENT WITH TOPOGRAPHY. POINT NOT CONSIDERED IN LAYER INTERFACE DETERMINATION.

4) EXISTING GROUND SURFACE BETWEEN BOREHOLES.

REFERENCE DRAWINGS

DRAWING NO.	DRAWING TITLE

OU 1-10 WRRTF-01 BURN PIT II BOREHOLE PLAN & PROFILE

intrepid technology & resources incorporated
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G-3

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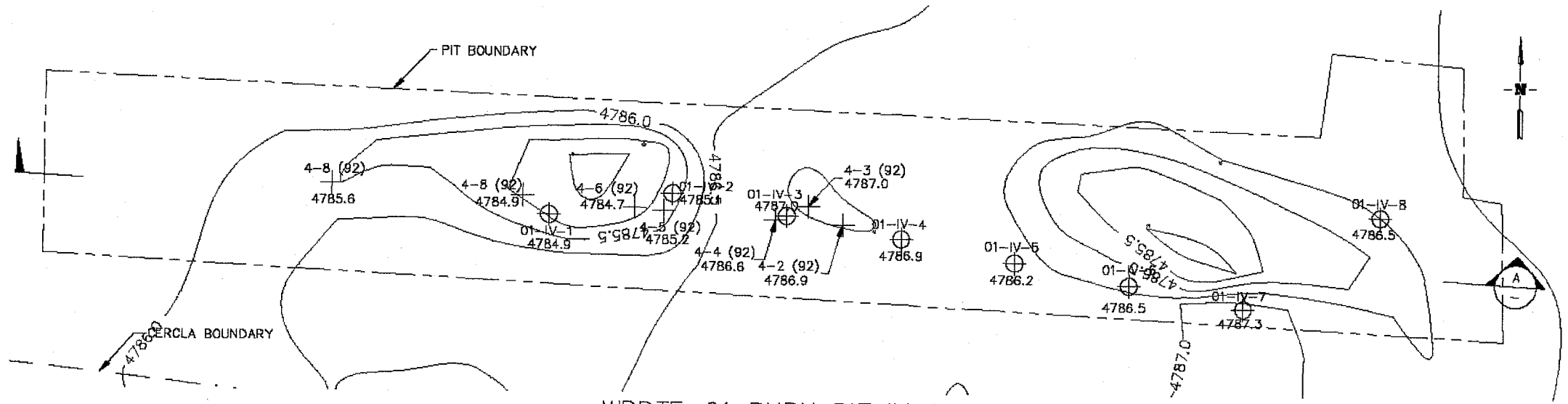
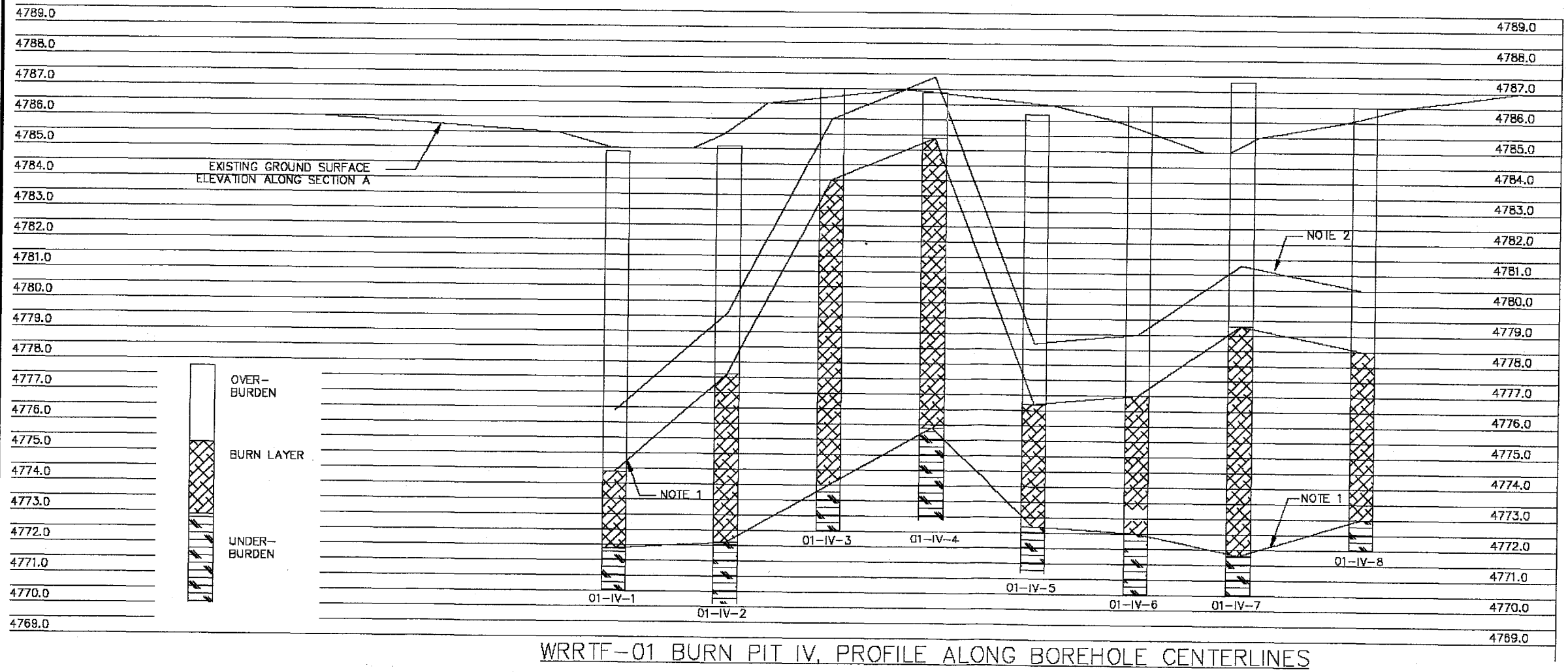


WRRTF-01 BURN PIT IV, PLAN VIEW

SCALE 1"=16'

FOR INFORMATION ONLY



WRRTF-01 BURN PIT IV, PROFILE ALONG BOREHOLE CENTERLINES

SCALE 1"=16' HORIZONTAL

FOR INFORMATION ONLY

REV	DATE	DESCRIPTION	DESIGN	APP'D BY

NOTES

1) LAYER INTERFACES INTERPOLATED GRAPHICALLY FROM 2001 BOREHOLE DATA.

2) MINIMUM DEPTH OF COVER OVER BURN LAYER PER ROD REQUIREMENTS.

PROFESSIONAL ENGINEER REGISTERED 10712 STATE OF IDAHO J. SHAUN DUSTIN

REVISION: 0

ORIGINAL SIGNED BY: Shaun Dustin

SEAL NUMBER: 10712

DATE ORIGINAL SIGNED: 12/3/2003

ORIGINAL STORED AT: Intrepid Technology & Resources

REFERENCE DRAWINGS

DRAWING NO.	DRAWING TITLE

OU 1-10 WRRTF-01 BURN PIT IV BOREHOLE PLAN & PROFILE

intrepid technology & resources incorporated

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G-4

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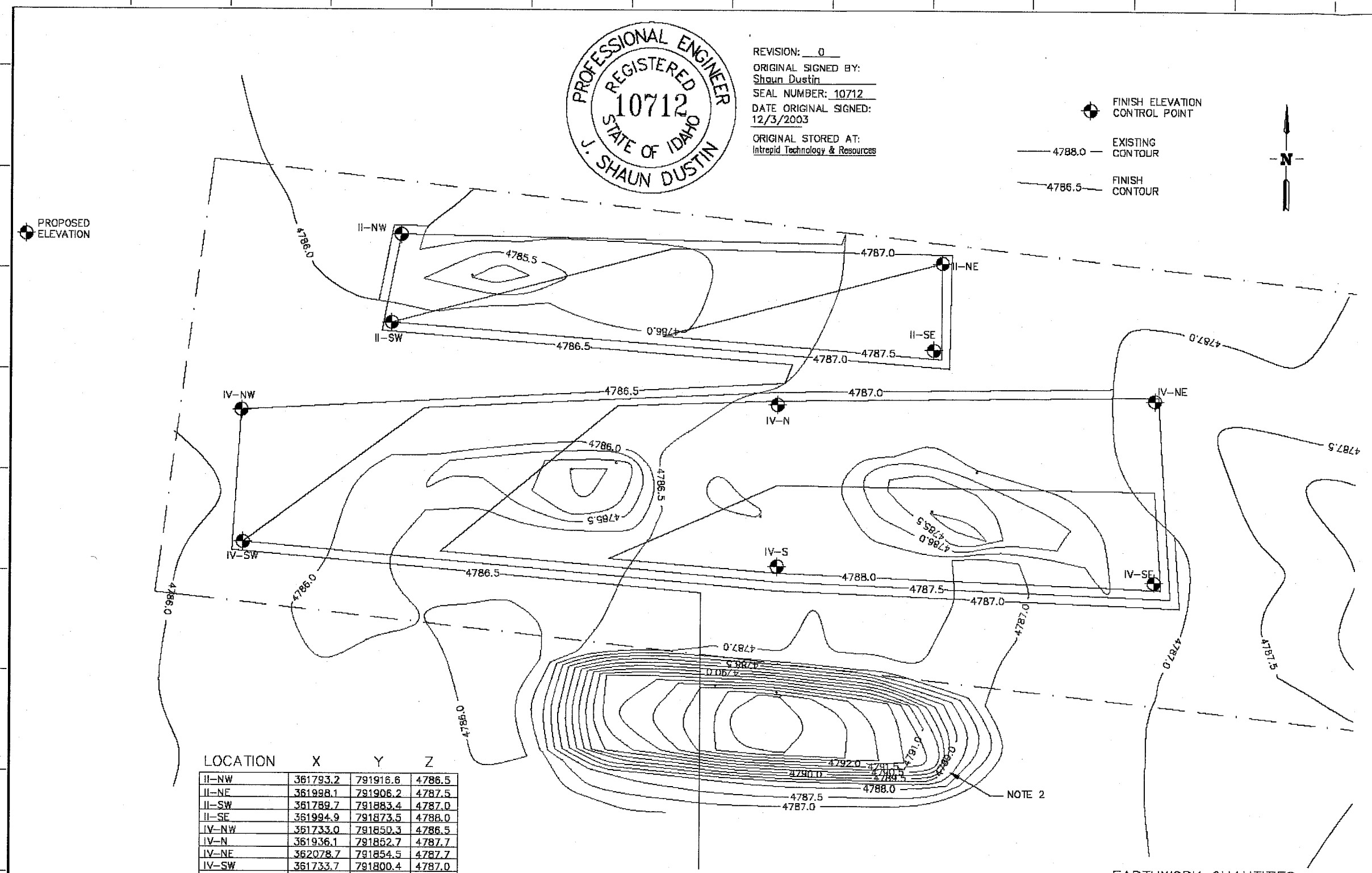

PROFESSIONAL ENGINEER
REGISTERED
10712
STATE OF IDAHO
J. SHAUN DUSTIN

REVISION: 0
ORIGINAL SIGNED BY: Shaun Dustin
SEAL NUMBER: 10712
DATE ORIGINAL SIGNED: 12/3/2003
ORIGINAL STORED AT: Intrepid Technology & Resources

FINISH ELEVATION CONTROL POINT
4788.0 — EXISTING CONTOUR
4786.5 — FINISH CONTOUR

N

LOCATION	X	Y	Z
II–NW	361793.2	791916.6	4786.5
II–NE	361998.1	791906.2	4787.5
II–SW	361789.7	791883.4	4787.0
II–SE	361994.9	791873.5	4788.0
IV–NW	361733.0	791850.3	4786.5
IV–N	361936.1	791852.7	4787.7
IV–NE	362078.7	791854.5	4787.7
IV–SW	361733.7	791800.4	4787.0
IV–S	361936.0	791791.7	4788.3
IV–SE	362078.7	791785.9	4788.3

FINISH ELEVATION CONTROL COORDINATES

EARTHWORK QUANTITIES

DESCRIPTION	VOL (CY)
IMPORTED PIT-RUN GRAVEL	450
IMPORTED TOPSOIL	0 (NOTE 2)
EXISTING BERM	1450

WRRTF–01 BURN PIT GRADING PLAN

SCALE 1"=20'

REV	DATE	DESCRIPTION	DESIGN	APP'D BY

NOTES

1) PLACE FILL AND GRADE SITE AS SHOWN IN THE DRAWINGS. FINAL GRADES AND ELEVATIONS SHALL BE AS SHOWN. FINAL ELEVATIONS SHALL BE ESTABLISHED AND VERIFIED IN ACCORDANCE WITH SECTION 01051 OF THE SPECIFICATIONS.

2) EXISTING BERM MAY BE UTILIZED AS FILL AT THE SITE INSOFAR AS IT COMPLIES WITH THE REQUIREMENTS OF SECTION 02200 OF THE SPECIFICATIONS.

3) MINIMUM SLOPE FOR ALL FILL OVER BURN PITS IS 1%. MAXIMUM SLOPE FOR ALL GRADING IS 15%.

4) BURN PITS MAY SETTLE UNDER COMPACTION AS THEY ARE BROUGHT UP TO GRADE. SUBCONTRACTOR SHALL MAKE ALLOWANCES FOR 50% SHRINKAGE OF FILL MATERIAL IN ESTIMATING FILL QUANTITIES.

REFERENCE DRAWINGS

DRAWING NO.	DRAWING TITLE

OU 1–10 WRRTF–01 BURN PIT II & IV GRADING PLAN

intrepid technology & resources incorporated
501 W. BROADWAY, SUITE 200, IDAHO FALLS, ID 83402
(208)529–5337 FAX: (208)529–1014

C–1

DRAWN: JSD	12/3/03	TASK ORDER NUMBER	
DESIGNED: JSD	12/3/03	2000–096	
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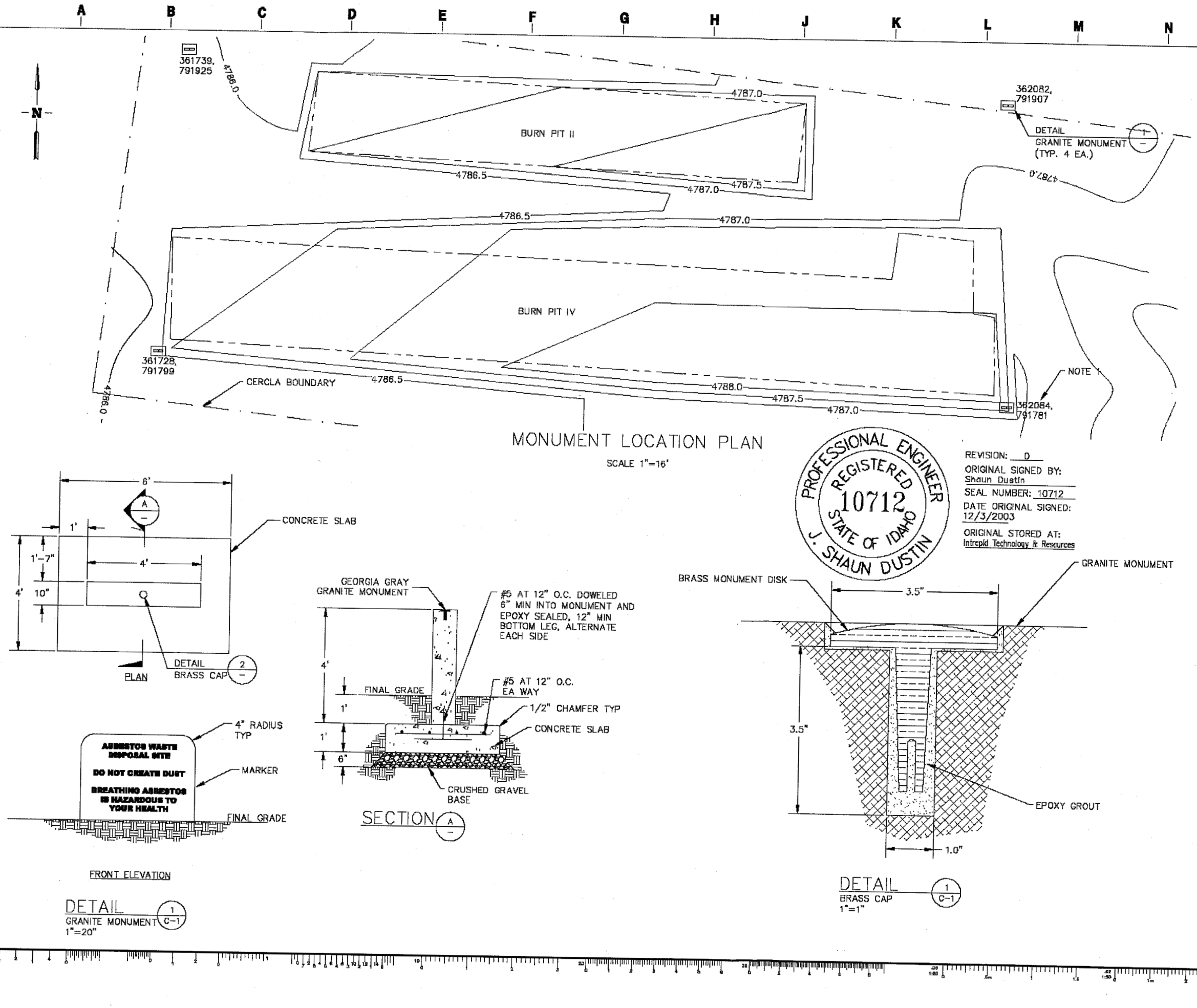

MONUMENT LOCATION PLAN

SCALE 1"=16'

FRONT ELEVATION

DETAIL
GRANITE MONUMENT 1 C-1
1"=20"

SECTION A

PROFESSIONAL ENGINEER
REGISTERED
10712
STATE OF IDAHO
J. SHAUN DUSTIN

REVISION: 0
ORIGINAL SIGNED BY:
Shaun Dustin
SEAL NUMBER: 10712
DATE ORIGINAL SIGNED:
12/3/2003
ORIGINAL STORED AT:
Intrepid Technology & Resources

DETAIL
BRASS CAP 1 C-1
1"=1"

REV	DATE	DESCRIPTION	DESIGN	APP'D BY

NOTES

1) COORDINATES PROVIDED FOR APPROXIMATE (± 1 FOOT) EMBEDDED BRASS CAP LOCATION (SEE DETAIL 1/C-1)

2) WHEN MONUMENT INSTALLATION IS COMPLETE, SURVEY BRASS CAPS THEN STAMP COORDINATES IN BRASS CAPS IN ACCORDANCE WITH SECTION 01051 OF THE SPECIFACTIONS AND USGS STANDARDS.

3) MONUMENTS SHALL BE PROVIDED AS CUT GRANITE STONE, POLISHED AND ENGRAVED ON SIDE FACING AWAY FROM CERCLA SITE.

4) BRASS CAP SHALL BE USGS STANDARD MONUMENT. SECURE BRASS CAP IN RECESS IN MONUMENT USING USGS STANDARD PROCEDURE FOR PLACING OF A PERMANENT MONUMENT IN EXPOSED ROCK.

5) SYMBOLS TO BE ENGRAVED TO 1/4" DEPTH

6) THE SUBCONTRACTOR SHALL PROVIDE FULL SCALE ENGRAVING TEMPLATE FOR REVIEW AND APPROVAL PRIOR TO PERFORMING ENGRAVING WORK

REFERENCE DRAWINGS

DRAWING NO.	DRAWING TITLE

2/3/03 BURN PITS II & IV MONUMENT PLAN

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C-2

DRAWN: JSD	12/3/03	TASK ORDER NUMBER	2000-096
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